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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/774,347	02/06/2004	Toshihiro Sawamoto	9319S-000665	5263

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EXAMINER

SOWARD, IDA M

ART UNIT	PAPER NUMBER
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2822

DATE MAILED: 03/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

H.A

Office Action Summary

Application No.

10/774,347

Applicant(s)

SAWAMOTO ET AL.

Examiner

Ida M. Soward

Art Unit

2822

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 10-13 is/are rejected.
- 7) ☒ Claim(s) 2-9 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10-06-2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is in response to the Applicants' amendment filed December 29, 2005.

Information Disclosure Statement

The objection concerning U.S. Patent Document 6,120,855 in the Information Disclosure Statement filed June 24, 2004 has been withdrawn due to the remark filed.

Claim Objections

The objections to claims 2, 10 and 13 have been withdrawn due to the amendment filed.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1 and 10-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Glenn et al. (US 6,564,454 B1).

In regard to claims 1, Glenn et al. teach a semiconductor device, comprising: a first semiconductor package 72 in which a first semiconductor chip 60 is mounted; and a second semiconductor package 70 in which at least one semiconductor chip 60 is mounted and is supported on the first semiconductor package 72 such that ends of the second semiconductor package 70 are arranged above the first semiconductor chip 60 (Figure 6, column 8, lines 29-67).

In regard to claim 10, Glenn et al. teach a semiconductor device, comprising: a first semiconductor package 72 in which a first semiconductor chip 60 is mounted; and a second semiconductor chip 60 that is supported on the first semiconductor package 72 such that ends of the second semiconductor chip 60 are arranged above the first semiconductor chip 60 (Figure 8, column 9, lines 1-54).

In regard to claim 11, it is inherent that the mounting structure is three-dimensional because the structure occupies all planes.

In regard to claim 12, Glenn et al. teach an electronic device, comprising: a first package 72 in which an electronic component 60 is mounted; and a second package 70 that is supported on the first package 72 such that ends of the second package 70 are arranged above the electronic component 60 (Figure 6, column 8, lines 29-67).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Glenn et al. (US 6,564,454 B1).

In regard to claim 13, Glenn et al. teach an electronic equipment, comprising: a first semiconductor package 72 in which a semiconductor chip is mounted 60; a second semiconductor package 72-1 that is supported on the first semiconductor package 72 such that ends of the second semiconductor package 72-1 are arranged above the semiconductor chip 60; and a motherboard 78 (Figures 7-8, column 9, lines 1-54).

However, Glenn et al. fail to teach a motherboard on which the second semiconductor package is mounted.

Glenn et al. teach a motherboard 78 on which the second semiconductor package 72-1 could be mounted because of the way the solder ball 68 are arranged the motherboard 78 could be mounted on the first semiconductor package 72 or the second semiconductor package 72-1 (Figures 7-8, column 9, lines 1-54).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the motherboard location as taught by Glenn et al. provide a semiconductor device with stackability.

Allowable Subject Matter

Claims 2-9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following patents are cited to further show the state of the art with respect to semiconductor devices:

Akram et al. (US 6,833,613 B1)	Asada (US 6,239,496 B1)
Asada (US 6,413,798 B2)	Choi et al. (5,677,569)
Corisis et al. (US 6,414,391 B1)	Farnworth et al. (6,020,629)
Farnworth et al. (US 6,614,104 B2)	Kweon (5,656,856)
Pu et al. (US 6,828,665 B2)	Wang et al. (US 6,590,282 B1).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ida M. Soward whose telephone number is 571-272-1845. The examiner can normally be reached on Monday - Thursday 6:30am to 5:00pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra V. Smith can be reached on 571-272-2429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

IMS
March 17, 2006

John M. Saward
AU 2822